

REMARKS

This Amendment is in response to the Office Action dated August 26, 2003. Applicant thanks the Examiner for the courtesy extended to the Applicant's agent, Michael van Loy in a telephone interview on October 15, 2003. An interview summary in a separate paper, and form PTOL-413 (the Applicant Initiated Interview Request Form) is included herewith.

Upon entry of this Amendment, Claims 1, 3, 5-6, and 9-12 are currently pending. Claims 2, 4, 7-8 and 13-16 are cancelled. Claim 1 has been amended to define the ends of the tubes and the location of the gas delivery surface. Claim 1 is also amended to incorporate the specific parameters of the innermost and outermost tubes originally recited in Claim 13. Claim 5 is amended to recite the relationship in equation form. These amendments are supported by the specification, figures and/or original claims. Applicant respectfully submits that this amendment does not introduce new matter.

Rejection Under 35 U.S.C. §102(b)

The Examiner rejects claims 1, 6, 9, 11-12 under 35 U.S.C. § 102(b) as anticipated by Soichiro (JP61-37969). Applicant traverses this rejection and submits that the amended claims are patentable over the cited reference.

To anticipate a claim under Section 102, a reference must teach each and every element of the rejected claim. Claim 1 as amended recites an innermost tube having two ends, one end being a gas delivery end, and an opposite capped end. Claim 1 further recites that gas is introduced into the innermost tube at the gas delivery end. The Soichiro reference does not teach this limitation. In Soichiro, assuming for argument as proposed by the Examiner that the innermost tube is tube 3, gas is introduced into the center of this tube, not at one end. Further, claim 1 of the present invention recites that the outermost tube has two ends with one end disposed proximate to the gas delivery end of the innermost tube. Again, Soichiro does not teach this limitation as gas delivery is not at the end of the tube.

Accordingly, since the cited reference fails to teach each and every limitation of the amended Claims, Applicant requests that the rejection of Claim 1, 6, 9 and 11-12 under 35 U.S.C. §102(b) be withdrawn.

Rejection Under 35 U.S.C. §103(a)

The Examiner rejects Claims 2-5, 8, 10 and 13-16 under 35 U.S.C. §103(a) as unpatentable over Soichiro (JP61-37969). Applicant traverses this rejection and respectfully submits that the amended claims are patentable over the cited reference.

In rejecting claims under § 103(a) the Patent Office bears the burden of establishing a prima facie case of obviousness (MPEP §2142). To establish a prima facie case, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine their teachings. Second, there must be a reasonable expectation of success. Third, the prior art reference(s) must teach or suggest each and every limitation of the rejected claims. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must *both* be found in the prior art, and *not* in Applicant's disclosure. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991); MPEP §2142.

The Patent Office admits that the Soichiro reference does not describe *ten* separate elements recited in the claims of the present invention (pages 5 to 7 of the subject Office Action). The Examiner argues however that it would have been obvious to one of ordinary skill in the art at the time the invention was made to vary either the dimensions of the gas delivery metering tube, or the distribution, and/or dimension of the orifice, and/or tube dimensions. Applicant respectfully disagrees.

As an initial matter, as discussed above the cited reference does not teach or suggest a gas delivery surface positioned at the end of the innermost tube. In contrast gas is introduced into pipe 3 in the center by pipe 5. There is no motivation or suggestion to modify the Soichiro apparatus to place the gas delivery surface at the end of pipe 3 (the innermost tube according to the Examiner's argument). In fact, Soichiro goes to great lengths to preserve the general structure of the conventional apparatus – with the gas delivery pipe disposed in the center of the cathode 1a - as shown in Fig. 4 of Soichiro. Thus, when faced with the problem of non-uniformity of reaction gas to the substrate (see page 5, second paragraph of translation of Soichiro) the Soichiro references still teaches introducing the gas from pipe 5 into the center of pipe 3. Applicant respectfully submits that this cannot motivate one to arrive at Applicant's claimed invention.

The Patent Office argues that it would be obvious for one to modify the various dimensions and parameters to arrive at Applicant's invention. Applicant respectfully disagrees. First, the apparatus of Soichiro is different from the apparatus of the present invention. Gas flow dynamics and fluid flow mechanics are complicated disciplines and are highly dependent upon the apparatus configuration, and Applicant submits that it is not obvious for one to arrive at the specific parameters recited in amended claim 1 when considering a different apparatus configuration.

Moreover, there are many variables that impact the parameters recited in Applicant's amended claim 1. First one would need to *identify* the relevant parameters and then conduct experimentation to determine the relationship and ranges of parameters. Specifically, as recited in Claim 1, the parameters that one would need to identify, vary and perform experimentation for are:

- length of the innermost tube L ;
- diameter of the innermost tube D ;
- diameter of one orifice in the array of orifices in the innermost tube d ;
- number of orifices in the innermost tube N ;
- cross section area of each of the orifices of the innermost tube A_{port} ;
- area of the innermost tube A_{tube} ;
- surface area of the outermost tube $SurfaceArea_{outer}$;
- total cross section of all of the orifices in the outermost tube NA_{outer} ;
- inner diameter of the innermost tube D_{in} ; and
- the effective diameter of the effective annular space D_{eff} .

Thus, there are ten parameters that would need to be identified. The relevant relationships between these parameters would then need to be established, and finally all of the parameters would need to be varied – in a variety of combinations - to determine the recited values. Such extensive development and experimentation is not obvious in light of the teaching or motivation of Soichiro. Applicant respectfully submits that *prima facie* obviousness is not established and that the rejection should be withdrawn.

Based on the foregoing, Applicant respectfully submits that the application is now in condition for allowance. If any matters can be resolved by telephone, the Examiner is invited to call the undersigned attorney at the telephone number listed below. The Commissioner is authorized to charge any additional fees to Deposit Account No. 50-2319 (Order No. A-67178/MSS (463035-409)).


Respectfully submitted,

DORSEY & WHITNEY LLP

Dated: November 26, 2003

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By:


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Applicant Initiated Interview Request Form

Application No.: 09 / 470,446 First Named Applicant: Ingle
Examiner: Rudy Zervigon Art Unit: 1763 Status of Application: Non-Final

Tentative Participants:
(1) Michael D. Van Loy (2) Maria S. Swiatek, Esq (Not present)
(3) _____ (4) _____

Proposed Date of Interview: 10/14/2003 Proposed Time: 4:00 EDT (AM/PM)

Type of Interview Requested:
(1) ☒ Telephonic (2) ☐ Personal (3) ☐ Video Conference

Exhibit To Be Shown or Demonstrated: ☐ YES ☒ NO
If yes, provide brief description: _____

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Issues To Be Discussed

Issues (Rej., Obj., etc)	Claims/ Fig. #s	Prior Art	Discussed	Agreed	Not Agreed
(1) <u>Rej. - 102(b)</u>	<u>1,6,9,11,12</u>	<u>JP61-37969</u>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(2) <u>Rej. - 103(a)</u>	<u>2-5,8,10,13-16</u>	<u>JP61-37969</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(3) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(4) _____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

☐ Continuation Sheet Attached

Brief Description of Arguments to be Presented:
Applicant and Examiner continue to disagree on the interpretation of "innermost tube" and
"connected at one end" in the claims. Applicant would like to discuss the cited reference (Soichiro),
specifically with regards to the Examiner's characterization of pipe 5 and partition 3.

An interview was conducted on the above-identified application on October 15, 2003.

NOTE:
This form should be completed by applicant and submitted to the examiner in advance of the interview (see MPEP § 713.01).
This application will not be delayed from issue because of applicant's failure to submit a written record of this interview. Therefore, applicant is advised to file a statement of the substance of this interview (37 CFR 1.133(b)) as soon as possible.

(Applicant/Applicant's Representative Signature) (Examiner/SPE Signature)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application Of:

Ingle *et al.*

Application Number: 09/470,446

Filed: December 22, 1999

For: Gas Delivery Metering Tube

Group Art Unit: 1763

Examiner: Zervigon, R.

INTERVIEW SUMMARY

MAIL STOP NON FEE AMENDMENT

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Applicant acknowledges with appreciation the opportunity to discuss this application with the Examiner during the telephone interview of October 15, 2003. In accordance with MPEP § 713.01, a copy of form PTOL-413A (the Applicant Initiated Interview request Form) is attached hereto.

During the interview, various aspects of the Soichiro prior art reference and the claimed structure were discussed. The Examiner alleged that the invention as claimed in Claim 1 does not differ sufficiently from the teaching of Soichiro. However, the Examiner did suggest that an amendment to Claim 1 adding a limitation that defines a surface through which the gas enters the innermost tube of the present invention at a would likely be persuasive in traversing the pending rejection of Claim 1 under 35 U.S.C. § 102(b) over Soichiro.

It was discussed that Soichiro teaches that the gas enters the apparatus disclosed therein via pipe 5 that penetrates approximately halfway into partition 3. Additionally, it was further

discussed that gas flow into partition 3 of the Soichiro apparatus occurs radially via cross-oriented tube 63.


Respectfully submitted,

DORSEY & WHITNEY LLP

Dated: October 17, 2003

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